

Forest Health Protection



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Western White Pine Pruning on the Clearwater National Forest, 2006

Susan K. Hagle, Plant Pathologist, Mark Klinke, Forest Culturist
USDA Forest Service, Northern Region

Summary

The Clearwater National Forest has a very active western white pine pruning program and accomplished a great deal with PSR funding in 2006. Pruning and pre- and post-suppression surveys were completed on four of five districts on the Forest (Table 1). Young western white pine were pruned on 364 acres and nearly 1300 acres were surveyed at a total cost of \$51,171.

A single contractor with a crew of 10-15 accomplished roughly 80% of the pruning in 2006. Pruning efficiency of this crew was about 90-95%

in stands we evaluated shortly after treatment. The treatment was assessed by the contract administrator prior to paying the contractor and all stands were determined to have met the 95% pruning efficiency standard for full payment.

Pre-treatment surveys were conducted in 42 stands, 1,294 acres and post-treatment surveys were done in two stands on Pierce district. The average cost for pre-treatment surveys was a little over \$11/acre and post-treatment surveys were \$13/acre.

Table 1. Expenditures for PSR-funded white pine pruning and surveys in 2006.

District	Pruning			Survey			Total PSR \$
	Acres	Cost \$/ acre	Pruning \$ total	Acres	Cost \$/ acre	Survey \$ total	
Pierce	145	71.28	10 336	712	10.14	7 219	17 555
Palouse	150	60.45	9 068	271	12.00	3 252	12 320
N. Fork	28	97.00	2 716	297	12.52	3 720	6 436
Powell	41	97.00	3 977	16	15.00	240	4 217
Sub Total:	364		26 097	1 296			40 528
Vehicle: FOR/Mileage			3 970				3 970
Contract Admin/Overhead			6 673				6 673
Totals: Acres	364			1 296			
Dollars \$			36 740			14 431	51 171



Background

The Clearwater National Forest is the heart of the historic white pine type. Most of the Clearwater provides prime white pine habitat. This Forest managed an active timber program in the 1980's including numerous regeneration harvests that were planted with high proportions of rust-resistant western white pine.

These young stands are now of particular value because of their species composition. White pine and western larch constitute a large proportion of the species composition of these stands along with

Douglas-fir and grand fir. Root diseases are prevalent and increasing in the young Douglas-fir and grand fir in these stands, while white pine and larch are relatively resistant.

Unharvested and selectively harvested stands on the forest are predominantly grand fir, Douglas-fir and western redcedar with root disease and heartrot general throughout the type. Restoring western white pine and western larch is important both for the ecologic and economic health of the Forest. Therefore the value of rust-resistant white pines far exceed their future timber value.

Evaluation of Pruning Projects

Pruning was accomplished by contract on 82% of acres, mostly on Pierce and Palouse Ranger Districts. The remainder was performed by local fire crews, largely on Northfork and Powell Ranger Districts. The contract crew was under the direction of Anaclato Perez. This crew pruned the 295 acres on Pierce and Palouse Ranger Districts that were

financed using PSR monies and additional acreage funded from other sources (including RAC). The winning bid was considerably lower than expected. Recent contracts have gone for \$105 to \$130 per acre but Perez's bid was \$60.45 per acre for the Pierce stands and \$71.28 for the Palouse. Despite some concern that the bid might be too low and lead to poor performance or default, the contracts

Table 2. Stands pruned in 2006 with PSR funding.

District	Crew	Stand	Acres	Location Name
Pierce	Contract	10205031	5	GEZEL CR
	Contract	10407036	5	GOLD SHELL
	Contract	10706048	6	MOOSEHORN DOLLA
	Contract	11804032	62	RD 5216
	Contract	11804055	67	RD 5216
Palouse	Contract	25601041	21	
	Contract	25602043	21	
	Contract	25603018	28	
	Contract	27903024	26	
	Contract	27903025	43	
	Contract	29101033	11	
Northfork	Force account	33603069	12	
	Force account	33603070	1	
	Force account	33603071	6	
	Force account	33603086	4	
	Force account	33604079	5	
Powell	Force account	63302004	17	JOHNBOY
	Force account	63302010	24	JOHNBOY
		18 stands	364	

were awarded to Perez. After inspecting the work, the contract administrators signed off on all stands and the contractor was paid in full indicating that the projects were completed within contract specifications.

Walk-through monitoring inspections

We found error rates to be within acceptable limits in walk-through inspections of a sample of pruned stands. We inspected three of the stands worked by Perez's crew and tallied a sample of pruned trees (Table 3). All three were on steep slopes in cedar habitat types. They had been clearcut harvested and broadcast burned in 1987 planted in 1988. All three sites were planted with F2 white pine stock from the Moscow arboretum (lot 6394). A walk- through

tally of trees in each plantation yielded similar results for all three. Of 70 pruned trees examined in 11802035, seven had branches below 6 feet that had been missed (live branches that had not been



Table 3. Results of walk-through tallies in three stands pruned under contract in 2006. Percent of trees satisfactorily pruned.

District	Stand	Acres	Aspect	Elev.	Plantation composition	Tally Result
Pierce	11802035	21	N	4100'	western white pine, western larch and Douglas-fir	90%
	11804032	62	NW	4200'	western white pine, western larch and Douglas-fir	95%
	11804055	67	S	4400'	western white pine, western larch, Douglas-fir and ponderosa pine	94%

pruned). Of 120 pruned trees in 11804032, six had missed branches. And in of 104 trees in 11804055, six had missed branches. No other faults were observed. That is, we did not see trees that should have been treated but were not, nor did we see trees that were pruned less than the required height.

In most cases, the missed branches were at the base of trees, often with duff covering the branch attachment. We also observed that trees with missed branches tended to be clustered in stands, suggesting that the error may have been committed most consistently by a single member of the crew. It is apparent that this person was not diligent in checking around the base of all trees thereby overlooking some branches that were under the duff or pruning slash. Although these basal



branches often have low vigor because of shading, they are among the most likely branches to bear infections because they have been exposed to infection the longest.

A few trees had been pruned that had non-prunable stem cankers or branch cankers. This type of error does not constitute a fault. Pruning of these trees was not required by the contract. They were probably pruned before the operator noticed the canker.

Contract administrator inspections

An inspection of the each of the contractor-pruned stands is performed by the contract administrator for the respective District. Inspection is based on a combination of visual observations and sample plots in each unit. If pruning quality looks acceptable based on the walk through inspection, the contractor will get full pay for that unit. If walk through observations indicate significant problems,

such as numerous missed trees or incompletely pruned trees, plots are used to obtain a representative sample.

Pruning Quality is calculated as a simple percent

$$\frac{\text{Number of satisfactorily pruned trees}}{\text{Number of trees that should have been pruned}} \times 100$$

If the contractor attains 95% quality or greater, they receive full pay. Quality less than 95% receives the actual percent of pay based on inspection plots. If plots indicate 93% the contractor would get 93% of their bid price/acre. Inspection of 85% or less requires rework of the entire stand.

Suitability of stands for treatment

In addition to pruning quality, we assessed the suitability of the stands for pruning. In all three cases, we found the stands to have been very good candidates for treatment. Each had vigorous white pines of genetically selected seed sources and sufficient evidence of rust infection to justify treatment. Most of the trees could be rendered canker-free by pruning, there were relatively few stem canker as yet. And the stands were at the proper age for treatment.



White pine was a very important component in the pruned stands. Stands were planted with white pine, larch and Douglas-fir. Grand fir was a common understory species.



Patches of root disease mortality were just beginning to develop in the pruned stands. Clusters of several Douglas-fir trees, usually near inoculum-bearing stumps, are common in these stands. As root disease continues to develop throughout the life of the stands, resistant white pine and larch components will be increasingly desirable.

All three sites also had abundant evidence of root diseases to which white pines are resistant, thus increasing the value of the white pine component in these stands.

Given the experience of the Clearwater Forest in pruning project management, it is expected that stands would be well-chosen and projects well-conducted.

Evaluation of Survey Projects

Pre-treatment surveys

Pre-suppression surveys were conducted in 42 stands on three districts on the forest (Appendix A, on page 6). Overall, 1296 acres were surveyed for potential for treatment at an average cost of \$11.13/acre.

The methods for pre-suppression surveys vary by District. Pierce and Palouse Districts are the most involved in white pine pruning. Pierce District surveys are walk-through exams conducted by the district Forester, Clare Brick. She uses certification exam data as a basis for selecting stands for walk-through examination. During a walk-through, she confirms that the stocking of white pine is adequate to justify a project, estimates the average height of white pines, and estimates the percent of prunable and non-prunable white pines. From this, she determines the appropriateness of pruning treatment.

Palouse District uses a seasonal silviculture crew to record measurements on 1/50th acre quick plots. One plot per acre is established on a grid throughout the stand. The crew counts the total number of white pines on the plot, the number that are prunable. They estimate the average height of white pine on each plot. Tallies are turned over to the district silviculturist but they are not entered

into the database. The district silviculturist determines the eligibility of each stand for pruning.

This information is also used to prepare the bid invitations. Prospective contractors are provided some basic data on each stand including the stand acres, the approximate range of prunable white pine per acre, and the range of white pine heights. They are encouraged to visit each stand before submitting a bid.



Silviculturists will consider the vigor and importance of the white pine component in a stand as well as the frequency and location of cankers when deciding whether to prune.

Post-treatment monitoring

Monitoring of treatment effectiveness was a minor part of the program in 2006. With money and time limited, it is natural to place emphasis on treating as many stands as possible.

It is commendable that Pierce District took on post-suppression monitoring in two treated stands (Table 5). Walk-through surveys were conducted in these stands with informal counts of successfully and unsuccessfully treated trees. The cost for these assessments was only \$13 per acre.

Table 4. Post-treatment surveys 2006 Clearwater National Forest

District	Stand	Acres	\$/A	Cost	Location Name
Pierce	10502002	18	13	234	DUTCHMAN
	10503062	27	13	351	DUTCHMAN
		45		585	

Resource publication:

Schnepf, C. C. and J. W. Schwandt. 2006. Pruning western white pine. A vital tool for species restoration. Pacific Northwest Extension. University of Idaho. PNV 584. 62 p. Pocket size, water resistant.

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Appendix A. Pre-treatment surveys 2006 Clearwater National Forest						
District	Stand	Location Name	Method	Acres	\$/A	Cost
Pierce	10501051	SIBERIA #2	Walk-through	35	10	350
	10603031	SNOWY CAMP	Walk-through	31	10	310
	10801012	ELDORADO MOUTH	Walk-through	36	9	324
	10901006	SIBERIA #2	Walk-through	27	10	270
	10902009	WHITE CR #2	Walk-through	80	10	800
	10905030	ELDORADO MOUTH	Walk-through	23	10	230
	11106013	FANTASTIC	Walk-through	9	10	90
	11106028	FAN CR #3	Walk-through	29	10	290
	11106043	FAN CR #3	Walk-through	16	10	160
	11202007	UPPER YAKUS	Walk-through	32	10	320
	11202014	UPPER YAKUS	Walk-through	24	10	240
	11202016	UPPER YAKUS	Walk-through	9	10	90
	11202017	UPPER YAKUS	Walk-through	25	10	250
	11202046	UPPER YAKUS	Walk-through	6	10	60
	11507001	CABIN CR	Walk-through	10	10	100
	11602018	THREE BEAR	Walk-through	63	10	630
	11802035	RD 5216	Walk-through	21	10	210
	11804009	RD 5216	Walk-through	30	10	300
	11804032	RD 5216	Walk-through	62	10	620
	11804055	RD 5216	Walk-through	67	10	670
	12001068	CABIN CR	Walk-through	22	10	220
	12001130	CABIN CR	Walk-through	10	10	100
Palouse	27903024		Quick Plot	26	12	312
	27903025		Quick Plot	43	12	516
	27904013		Quick Plot	33	12	396
	27904025		Quick Plot	26	12	312
	27904027		Quick Plot	13	12	156
	27904029		Quick Plot	27	12	324
	29101014		Quick Plot	21	12	252
	29101030		Quick Plot	25	12	300
	29101031		Quick Plot	24	12	288
	29101032		Quick Plot	10	12	120
	29101037		Quick Plot	12	12	144
	29101041		Quick Plot	7	12	84
	29101043		Quick Plot	4	12	48
Northfork	31108002		Walk-through	85	12	1020
	31108010		Walk-through	22	15	330
	31108011		Walk-through	30	15	450
	31108079		Walk-through	85	12	1020
	33502001	DUMMY SALE	Walk-through	58	12	696
	33605014		Walk-through	17	12	204
Powell	64502044		Walk-through	16	15	240
Total	42 stands			1 296 A		\$14 431